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A Review on Formulation and Evaluation of Herbal Hand Wash

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Abstract: *The composition and assessment of a herbal handwash are presented in this abstract. The market for herbal hand sanitisers has grown as people's concerns about hygiene and their desire for natural goods have expanded. In this work, a blend of natural extracts with established antibacterial qualities was used to make a herbal handwash. Neem, tulsi, and aloe vera extracts were carefully chosen for their ability to fight bacteria and be kind to skin when composing the composition. To determine the handwash's effectiveness and safety, a thorough evaluation was conducted. Using accepted techniques, the handwash's antimicrobial activity was assessed against a panel of common bacteria and fungus. The outcomes proved the efficacy of the herbal extracts by showing a notable decrease of microbiological development. Unexpectedly, there has been a shift in mindset in recent years. It indicates that consumers are far more drawn to herbal or natural items than to manufactured, chemically active ones. Studies show that using chemically active chemicals can have a wide range of detrimental, even toxic, adverse effects. such as arsenic, copper, lead, etc. While it's not a given that all synthetic goods and medications are bad, individuals are really drawn to using natural items due to the rare or less than 1% adverse effects. The primary goal of this effort is to create a herbal hand wash using natural herbal ingredients such as neem, tulsi, aloe vera, rose extract, and lemon juice. The first thing that comes into contact with any viral microbial or bacteriaal infection.*

Keywords: Tulsi, Neem, Reetha, Aloevera, Rose water

I. INTRODUCTION

Our hands are the main entry points for a variety of illnesses entering our bodies. Numerous disorders are brought on by the infection that results from it, particularly in children. It is crucial to remember to regularly wash your hands after a certain amount of time to prevent infections like these. The handwash sold in local markets is primarily made up of several chemical compounds that could be harmful to our skin in multiple ways. According to this idea, the hunt for substitute organically derived ingredients that don't create any

The last few years have seen a surge in study on skin injury. As a result, an attempt has been made in this study to create a skin-friendly handwash that contains the essential extracts of several substances, such as tulsi, aloe vera, and neem are consequently evaluates their antibacterial and antiseptic performance. Multivariate criteria, including aroma, colour, viscosity, pH, foam height and retention, and grittiness, were used to provide the foundation of the evaluation. In order to determine whether the handwash was suitable for human use, a few more characteristics were tested, including the skin irritation test. The collected results showed no negative side effects and were confirmed to be within the desired ranges.

Hand washing, also referred to as hand hygiene, is the process of cleaning one's hands with soap or hand wash and water to get rid of germs, viruses, and other unwanted substances that have adhered to the skin. Since damp hands are more likely to become contaminated again, drying the cleaned hands is an important step in the procedure. In the event that soap and water are not available, hands that are not obviously extremely dirty or greasy can be cleaned with hand sanitiser that contains at least 60% (v/v) alcohol in water. Maintaining good hand hygiene is essential to stopping the spread of infectious diseases at home and in other public places.Before and after certain activities, the World Health Organisation (WHO) advises washing hands for at least 20 seconds. Among them are the five crucial periods.

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HERBS

The word "herbs" conveys the essence of the plant immediately. Herbs are any part of a plant that is used in cooking, directly applied as medication (lep, mask, etc.), cosmetics, etc. These can be extracted, dried, or utilised fresh. These are found in nature, but they are not like other common plants; to put it another way, these are the plants that have any kind of medical properties. Herbs are unrefined, plant-based medications used to treat disease states, frequently chronic ones, or to achieve and sustain better health. There are medical uses for these herbs. Because they are non-toxic, herbs can be used more effectively than poisonous substances.Herbal products are plant-based medications. Herbal remedies are sometimes referred to as phytomedicine or herbal medicine. Many individuals think that items with the term "natural" are always safe and healthy, according to a survey. While not entirely accurate, natural or herbal treatments have far fewer negative effects than synthetic or chemically treated goods.It's not required to fit everyone, but for those with extremely sensitive or allergic skin, the percentile is less than 5%. A plant or portion of a plant utilised for flavour, aroma, or medicinal purposes is called a herb. It can validate a certain class of dietary supplements.They can be purchased as pills, capsules, powders, teas, extracts, fresh or dried plants, lotions, and daily glossaries that include things like juices, soap, shampoo, and hand wash. Allopathy is the term used to describe the conversion of some natural remedies into contemporary medications.

What is Hand wash:

Hand wash refers to the process of cleaning one's hands with soap and water to remove dirt, grime, and microorganisms. It's a crucial practice for maintaining personal hygiene and preventing the spread of illnesses.

Benefits of hand wash :

- Prevents spread of infections and diseases Removes dirt, grime, and allergens
- Reduces risk of respiratory and gastrointestinal illnesses
- Protects vulnerable populations (e.g., young children, elderly, people with compromised immune systems)
- Maintains overall health and well-being

When to wash your hands:

- After using the bathroom
- Before eating or preparing food
- After blowing nose, coughing or sneezing After touching animals or their waste
- After being in contact with someone who's sick After touching garbage or chemicals
- Before and after caring for a wound

Proper hand-washing technique:

- Wet hands with warm water Apply mild soap
- Rub hands together (20-30 seconds) Palms
- Backs Fingers Wrists
- Between fingers Under nails
- Rinse thoroughly
- Dry with clean towel or air dryer

Effective hand-washing tips:

1. Use mild soap and warm water
2. Use hand sanitizer when soap and water aren't available
3. Avoid using hot water, harsh soaps, or abrasive scrubbers
4. Teach children proper hand-washing techniques
5. Make hand washing a habit!

Remember, hand washing is one of the simplest and most effective ways to protect yourself and others from illness.

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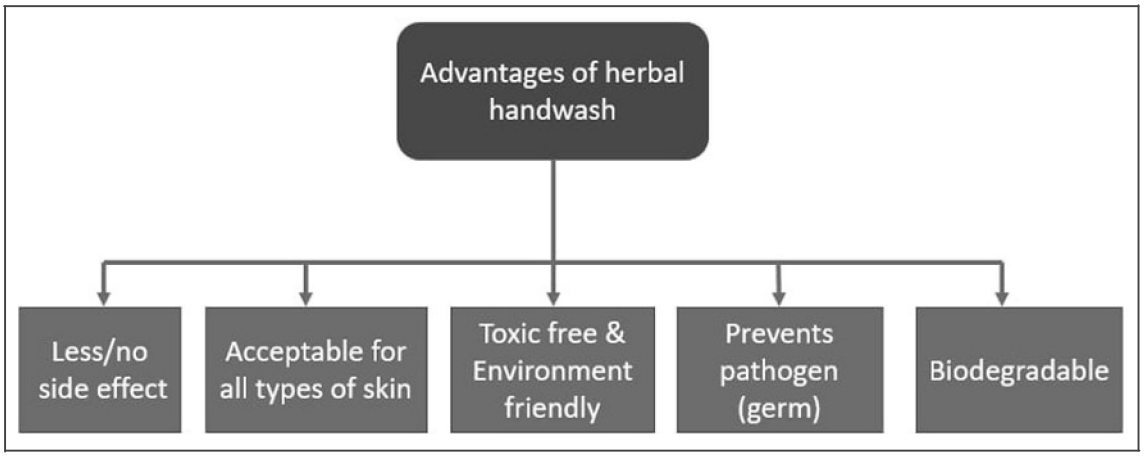
When should you wash your hands:

Germs can spread from person to person and infect you and other people if they get on hands and are not cleaned off.It is advised that you wash your hands with soap before, during and after these five crucial times: eating breakfast, lunch and supper; taking a bath or shower; and using the loo.But, when a disease like the coronavirus is prevalent, there are other crucial times as well. These are following large crowds of people, like at events, malls, and airports; following potentially ill individuals; and visiting locations where germs could spread quickly, like medical facilities or waiting rooms.Additionally, you should wash your hands before, during, and after preparing food, after coughing or sneezing, after handling animals or animal feces, and whenever you contact surfaces that have been touched by a lot of people.Always attempt to cough or sneeze into your elbow or a tissue rather than onto your hands.

Advantages of Herbal Hand wash:

1. No side effects.
2. Bacteria on our hands can be minimized.
3. It also helps to clear antiseptic ans fungal problem faced by the skin.
4. It also helps to remove dirt and oil effectively from the skin.
5. Easier access compared to using soap and water.
6. The easiest way to get rid of microorganism.
7. Hand wash prevent germs from entering into our body.



INGREDIENTS USED IN HERBAL HAND WASH

1) Aloe Vera

Scientific classification of aloe-vera Kingdom : plantae

Order : Aspargels

Family : Xanthorrhoeaceae Genus : Aloe

Species : A.Vera

Bionomical name : Aloe vera

The species of succulent plant known as aloevera most likely originated in northern Africa. Although closely related Aloe is not found in northern Africa, the species lacks a naturally occurring population.It is commonly stated that the Species has been utilised in herbal therapy since the first century. Aloe vera extract is frequently utilised in the alternative medicine and cosmetic industries, where it is touted as having smoothing, healing, or regenerative qualities.

Aloe is the dried juice that is extracted from the base of the leaves of different species of aloe through incision.Aloe perry Baker, also known as Aloevera linn, Aloe barbandesis, is a member of the liliaceae family. It is native to the islands of Socotra and Zanzibar as well as their surrounding regions. As a result, the plant used in these regions is referred to as soothing and zanzibar.Aloe barbendesis or vulgaris are other names for Aloevera linn.Aloe is a perennial that grows slowly to 0.8 by 1 millilitre. The plant likes medium-to-light-colored, sandy soil. may grow on soil with low

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nutrition. The plant prefers neutral, acidic, and basic soil. It needs either dry or damp soil to thrive, and it can withstand drought.These plants are xenophobic.Seeds can be used to spread it.Warm green seeds are visible in the spring.

Chemical constituents:-

Three isomers of aloins, barbaloins, and isobarbaloins, which together make up so-called crystalline along, are the most significant components of aloevera.consisting of between 10 and 30 percent other ingredients, such as amorphous aloin, resin, eroding, and aloe emodin. There are barbaloins in every variety.Isobarbaloin, a crystalline compound with a faint yellow colour and a bitter taste that is soluble in water, is found in small levels in cape Aloe, missing from socotrine, and present in curaco Aloe.Barbaloin is the main ingredient in both zanzibar and socotrine aloe.

Uses of Aloe Vera:-

Aloe vera can be used as a mild cleanser and moisturizer for the hands, it is generally recommended to prioritize soap and water or hand sanitizers for proper hand hygiene, especially when dealing with situations that require thorough cleaning or when there is a higher risk of infection transmission.

Fig No.1 Barbadensis Miller

EXTRACTION METHOD OF ALOE BARBADENSIS MILLER: (Aloe Vera)

Mature Aloe Vera leaves are selected for harvesting. Typically, the outer leaves are chosen.
The harvested leaves are thoroughly washed to remove any dirt or contaminants.
The outer green rind of the Aloe Vera leaf is removed, leaving only the inner gel.
The inner gel is carefully separated from the leaf. ensuring that only the clear gel is collected and any yellowish latex close to the rind is avoided

Reetha

Sapindus mukorosis, often referred to as Rita, washout, or Indian soapberry.It belongs to the Sapndaceae family of trees.At elevations of up to 1200 meters, this deciduous tree can be found growing in the lower foothills and midhills of the Himalayas. In the lychee family, Sapindaceae, Sapindus is a genus of five to twelve species of tiny trees and shrubs that grow in tropical and warm climates. Both evergreen and deciduous species are found in this genus. Because the fruit pulp is used to manufacture soap, members of the genus are also referred to as soapberries or soap nuts.The Latin terms soap, which means soap, and indicus, which means of India, are the source of the generic name.

Scientific classification:-
Kingdom : plantae
Clade : Angiosperms Order : sapindales Family : sapindaceae
Subfamily : sapindoideae Genus : sapindus

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Uses:-

The saponins found in the draperies (soapnuts) have surfactant qualities and were once utilised by ancient Americans and Asians for washing. There have been several other documented uses for sapindus, including the production of arrows from the wood and ornamental items from the seeds.Traditionally, folk treatments have employed sapindus leaf and fruit extracts to treat a variety of ailments.

Fig No.2 Sapindus Mukorossi

EXTRACTION METHOD OF SAPINDUS MUKOROSSI: (Reetha)

Fresh reetha fruit is collected; seed is removed and chopped finely using a clean knife.
The chopped fruit is shed dried for 3 weeks.
The dried fruit is then powdered using a mixer grinder; the prepared powder is sieved so as to remove any large pieces of the fruit.
The fine powder is then weighed 8.6gm.
Macerated in 100 ml of methanol in a beaker.
Stir the mixture and cover it with an aluminium foil and macerate it for 3 days.
After that the macerated mixture is filtered using a filter paper and the filtrate is then kept on hot water bath for drying.
The completely dried extract is then collected and kept in desiccator for cooling.
The cool extract is then weighed on a digital weighing machine.

Tulsi

Kingdom : plantae Division : magnoliophyta Class : Magnoliopsida Order : Lameness
Genus: : Ocimum
Species : O.tonuiflorum
Bionomical name : ocimum tenuifloram/Ocimum sanctum Nepali name : Tulsi

Common names for Ocimum sanctum include holy basil and Tulsi. The leaves of the Lamiaceae family plant, Ocimum sanctum, are used to make tulsi, both fresh and dried. An aromatic perennial herb is tulsi.Tulsi is well-known for its antibacterial, detoxifying, and purifying qualities.Tulsi kills 99.99% of bacteria, protecting your hands.Tulsi now,days farmed commercially for its volatile oil.This tiny, much-branched herb grows to a height of 30 to 75 cm. Tulsi is used medicinally in various forms, but dried and fresh leaves are especially useful.The leaves have an acute shape, are elongated, have pubescent edges on both sides, and have tiny glandular dots. The leaves have a slight compression and have a green tint with aromatic flavours. Seeds are subglobose and reddish-black in colour. The leaf has a dicyclic type dorsiventral stomach. Particularly abundant on lower surface.

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Chemical constituents:-
It contains approximately 70%Eugenia,carvacrol 3% and Eugene methyl
ether. It also contains caryophyllin,seeds contain fixed oil with good drying properties. The plant also contain alkaloids,glycosides,sapping,tannis an appreciable amount of vitamin c and traces of maleic and Tartaric acids.the fresh leaves,it's juice and volatile oil are used for various purposes.

Uses of Tulsi:-
The leaves have diaphoretic, fragrant, spasmolytic, and stimulating properties. The juice has antiperiodic properties and is a component of various skin disease preparations as well as earache remedies.It functions as an antiviral, antifungal, and natural immunity enhancer.

EXTRACTION METHOD OF TULSI
Sample of Tulsi leaves were separated and washed with water and dried properly dried leaves were separated.
Methanolic extract was prepared from the Tulsi powder. A total 20gm of finely powder of Tulsi was diluted with 80ml of methanol for 4 to 6 days. The alcoholic decoction was subjected to filtration to obtain a clear filtrate.

Fig No.3 Ocimum Tenuiflorum

Neem
Kingdom: Plantae Subkingdom: Tracheobionta Division: Magnoliophyta Class: Eudicot
Subclass: Rosidae Order : Sapindales Family: Meliaceae Genus: Azadirachta Species : A . indica

Medicinal use of neem-
Azadirachta indica is a plant that belongs to the family Meliaceae. Its common name is neem. It is the source of numerous medicinal compounds used in conventional medicine. Neem leaves are known to possess antibacterial and antifungal characteristics that can effectively combat a range of harmful bacteria, such as Staphylococcus aureus, Pseudomonas aeruginosa, and E. coli. Neem is a multipurpose tree with several health advantages. It was shown that the tree's various sections has antibacterial qualities against a variety of microbes. Neem leaves may also be used to treat a variety of illnesses, such as dermatitis, ringworm, skin infections, rashes, hyperglycemia, diabetic foot, and gas gangrene

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Fig No.4 Azadirachta Indica

EXTRACTION METHOD OF AZADIRACHTA INDICA: (Neem)

Fresh neem leaves are collected and shed dried for 15 days.
The dried leaves then powered using mortar and pestle.
The powered neem leaves are weighed 25gm and macerated in a beaker using 100ml of methanol.
The prepared mixture is kept covered with aluminium foil and kept for 3 days for maceration while stirring in between, and then the mixture was filtered using a filter paper.
The excess solvent is evaporated using a Rotary evaporator and then the remaining mixture was dried on a hot water bath.
The dried extract was collected and kept in desiccator for cooling.
The prepared extract is weighed.

Methyl Paraben

Methylparaben is a synthetic preservative commonly found in cosmetic and personal care products, including some hand wash formulas, to prevent the growth of bacteria and mold. However, a number of "natural" and "herbal" products include methyl paraben. For increased shelf life and stability, certain herbal or natural hand wash formulations may use synthetic preservatives like methylparaben, while others may rely on the innate antibacterial properties of particular herbal components or use other preservatives.

Rose water

Kingdom : Plantae Division : Magnoliophyta class : Magnoliopsida Order : Rosales
Family : Rosaceae Genus : Rosa
Species : Centifoli

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Fig No.5 Rosa Damascena Water

Rose water, a fragrant and versatile liquid, has been used for centuries in various applications:

Skincare**:**
Toner: Balances skin pH, reduces pores, and soothes irritation.
Hydrates: Moisturizes and softens skin.
Anti-aging: Antioxidants reduce fine lines and wrinkles.
Acne treatment: Anti-inflammatory properties help combat acne.

Haircare**:**
Hair rinse: Adds shine, softness, and fragrance.
Conditioning: Moisturizes and nourishes hair.
Dandruff treatment: Soothes scalp irritations

Health**:**
Digestive aid: Relieves stomach discomfort and bloating.
Anti-anxiety: Calms nervous system.
Menstrual relief: Eases cramps and bloating.

Beauty routines**:**
Face mist: Refreshes and revitalizes skin.
Makeup remover: Gentle and effective.
Bath soak: Relaxing and rejuvenating.
Rose water's versatility and natural benefits make it a valuable addition to various aspects of daily life.

Formulation Table:

Sr. no	Ingredients	Action	Quantity
1	Aloevera	Healing agent	7ml
2	Neem	Anti microbial agent	3ml
3	Tulsi	Purifying agent	3ml

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4	Reetha	Foaming agent	6ml
5	Rose water	Perfume agent	20ml
6	Methyl paraben	Preservative	1ml
7	Distilled Water	Base material	q.s

Table No.1.1 Formula of hand wash

METHOD OF PREPARATION OF HAND WASH
Take 3ml tulsi extract,, 7ml aleovera extract, 6ml reetha extract, 3ml neem extract mix in beaker.
Add 5ml water and 20ml rose water and mix it well .
After add 1ml methyl paraben and 5ml water and mix it.
Stirr well and when all the component become homogeneous mixture then transfer it in a well tightcontainer

EVALUATION TEST FOR HERBAL HAND WASH

Foam Height**:**
50 millilitres of distilled water were used to dissolve one gramme of hand wash gel sample. The mixture was moved into a 500 ml measuring cylinder. A 100ml volume was created by adding water. It was awarded 25 strokes and set away. It was noted how high the foam was above the aqueous volume.

PH test**:**
One gramme of gel-based herbal hand wash was combined with one hundred millilitres of distilled water. A digital pH meter that had been previously calibrated was used to measure the mixture's pH.

Stability Test**:**
For a week, the formulation of Polyherbal Hand Wash Gel was stored at various temperatures, including 40°C, 25°C, and 37°C. This allowed for stability studies to be conducted. There was no change in the stability studies'The hand wash formulation showed colour and no phase separation.

Spreadibility test:
After pressing 0.5 g of each formula between two slides for approximately five minutes, no further spreading was anticipated. The spread ability of the circles was determined by measuring the diameters of the spreaded circles in centimetres. The average of three determinations yielded the results.

Viscosity **-**
A digital Brookfield viscometer was used to measure the viscosity of the hand wash. A beaker was filled with a measured amount of herbal hand wash, and the viscosity was tested three times by dipping the tip of the viscometer into the gel.

II. CONCLUSION

The formulation and evaluation of the herbal hand wash incorporating neem, aloe vera, tulsi, rose reetha was proved successful. In this review the method of formulation, extraction process, advantage and disadvantage of hand wash was studied. Thus, it can be concluded that the herbal hand wash formulation is an effective and well-accepted alternative to conventional hand washes, offering natural antimicrobial properties while providing a refreshing and pleasant sensory experience

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